(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization

International Bureau



(43) International Publication Date 29 April 2004 (29.04.2004)

PCT

(10) International Publication Number WO 2004/035769 A1

(51) International Patent Classification7: C07K 14/47, 14/195

C12N 9/02,

(21) International Application Number:

PCT/GB2003/004388

(22) International Filing Date: 10 October 2003 (10.10.2003)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 0223696.6

14 October 2002 (14.10.2002)

(71) Applicant (for all designated States except US): ML LAB-ORATORIES PLC [GB/GB]; 17 Hanover Square, London W1S 1HU (GB).

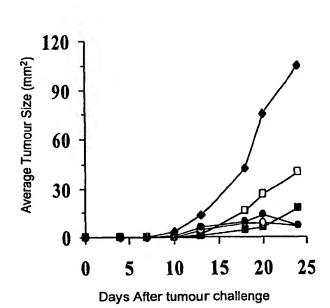
(72) Inventors; and

(75) Inventors/Applicants (for US only): LIPINSKI, Kai, Stefan [DE/GB]; ML Laboratories PLC, The Stephenson Building, Keele University, The Science Park, Keele, Staffordshire ST5 5SP (GB). DJEHA, Hakim [DZ/GB]; 6 Rookery Close, Nantwich, Cheshire, CW5 5SJ (GB).

- (74) Agent: GODDARD, David, John; Harrison Goddard Foote, Orlando House, 11c Compstall Road, Marple Bridge, Stockport SK6 5HH (GB).
- (81) Designated States (national): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (regional): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: IMPROVED IMMUNOTHERAPY



Naive Mice

-NTR

- GM-CSF

- NTR + HSP70

- NTR + GM-CSF

(57) Abstract: The invention provides an improved method of inducing an immune response against targeted cells. Using gene therapy to express both a toxin or prodrug converting enzyme as a means of killing a targeted cell type and also stress response protein (in particular, a heat shock protein) enhances the subsequent immune response directed against such cells. The method is particularly applicable to inducing an immune response against cancer cells. Also provided are polynucleotides, products and vectors for use in such a method.

WO 2004/035769 A1



Declaration under Rule 4.17:

— of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.